Horizontal Resonance Exp. Plan at AGS FY06

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Goal of Study

- Study the horizontal resonance at AGS
  - Get the resonance location & strength
  - Explore the relation of polarization vs. snake strength
  - Explore the relation of polarization vs. horizontal emittance
  - Explore the relation of polarization vs. beta function
- Realization
  - B-field scan
  - Polarization profile measurement

Plan of Study (I)

- B-field scan (3 shifts)
  - Goal : find out the resonance location and strength
    - location : Qs = n+Qh
    - strength: ε=w/2 (w is the full width) or by fitting
  - Measure the polarization at extraction with the variation of B-field which cover Gγ = 44.5 to 47
    - Measure the horizontal tune (new AGS tune-meter)
    - Take enough time before measure the polarization
  - Repeat the above B-field scan after changing the snake strength,horizontal emittance and beta function

Plan of Study (I)

- B-field scan (Cont.)
  - Repeat B-field scan by changing:
    - snake strength : CSK (15%) on on off
      WSK (5.9%) on off on
    - horizontal emittance : mismatch beam at the injection
    - beta function (maybe difficult)
  - Expectation:
    - Get the reasonable resonance strength at a certain location
    - Resonance strength is proportional and Polarization is inverse proportional to the snake strength and horizontal emittance.

Plan of Study (II)

- Polarization profile measurement (1 shift)
  - Goal : Depolarization comes from the horizontal motion
  - Measurement :
    - Ramp up beam to the top energy at the extraction
    - Take the polarization measurement by setting the target position around the beam center
  - Expectation :
    - Coincide with the B-field scan

Instruments

- AGS tune-meter
- IPM for emittance
- CNI polarimeter